May, 1924.—For this month definite information is not yet at hand respecting the pressure distribution at points outside of the United States and Canada but thanks to a timely articles in the Meteorological Magazine by Mr. C. E. P. Brooks [5] general information respecting the pressure and temperature distribution for the early part of the year is available.

We summarize from the article as follows:

The winter of 1923–24 inthe British Isles was characterized, particularly in November and December, 1923, and February and March, 1924, by an abnormal frequency of northerly and easterly winds.

Charts of monthly pressure deviation which are now regularly drawn for western Europe, the North Atlantic, and North America show that pressure as far back as October. 1923, was much below the normal north of Scotland—15 mb., the deficit increasing to 18 mb. over the Faroes. In North America an excess of 5 mb. was noted in the Missouri Valley. In November, 1923, the pressure deficit, now but 10 mb., was found over the Baltic.

Pressure over the North Atlantic was above normal, the excess being 5.6 mb. at Horta and 11.5 mb. at 50° N. 30° W., over the British Isles the lines of equal pressure departure were directed from north to south and northerly winds were abnormally frequent. In December the conditions were somewhat similar but the area of pressure deficit had shifted northward and the pressure-excess was now centered between Azores and Corunna. Pressure distribution over the North American Continent in December was without special significance. After two consecutive months of above-normal pressure, a reaction to lower pressure took place east of the Rocky Mountains.

During January, 1924, pressure was 5 mb. below normal over the ocean between Iceland and Scotland; in North America pressure was generally in excess of normal, the greatest excess being 6.8 mb. over the Great Basin. During February pressure over the North Atlantic west and northwest of the British Isles was above normal by about 10 mb. In North America pressure was again in excess except along the Atlantic coast north of Florida.

During March, 1924, pressure was below normal over the North Atlantic southwest of the British Isles, the greatest deficit being 15.5 mb. at Horta; it was 6.7 mb. above normal at Stykkisholm, Iceland, and since the average pressure difference between these two stations in March is but 12.5 mb., it follows that the normal pressure was completely reversed; hence, cold easterly winds prevailed over the British Isles.

Pressure for this month over North America, especially the Canadian Maritime provinces was exceptionally low, a deficit of 12.5 mb. being noted on the Nova Scotia coast. It may well be that pressure over the entire north Atlantic between certain latitudinal limits was well below normal. This is the most significant fact as regards the weather that has thus far been developed.

This great depression of the barometer over the Atlantic Ocean during March was associated with the eastward movement from the United States of a rather large number of cyclonic systems most of which passed to sea south of North latitude 40°. The movement thus initiated seems to have continued during April, although in a somewhat diminished degree. It seems clear that pressure over the middle-western north Atlantic, as indicated by the two stations, Horta and Bermuda was nearly normal during April and May; there was, however, an unbroken period of low pressure and cyclonic activity at St. Johns from May 14 to June 11, 1924.

In May, 1924, the movement of cyclonic systems across the United States was grouped along two paths—first across the Canadian Maritime Provinces from the region of the Great Lakes, and second from the Virginia capes northeastward toward the Grand Banks (see Chart II). Anticyclones, on the other hand, avoided the region east of the Mississippi as may be seen from Chart I.

In this connection mention should be made of a news item that appeared in the public prints, some days ago, to the effect that sea-water temperatures in the vicinity of the Grand Banks were about 7° F. higher than usual for the season.

The authority for the statement is Lieut. E. H. Smith, of the United States Coast Guard, in charge of meteorological work on the Intrnational Ice Patrol. It would be premature to discuss this fact in the absence of exact information as to what the observations on the Ice Patrol disclose.

The conclusion that this discussion seems to point to is that May temperatures in the United States, at least, are conditioned upon the vigor of the circulation of air between the equator and the poles. When the balance in the exchange is on the equatorial side temperature rises perhaps a little faster than when the exchange is normal, and when, on the other hand, the balance in the exchange is on the polar side, as in the cool Mays discussed, the normal seasonal rise in temperature is retarded both by direct importation of cold air and the formation of great cloud blankets induced thereby, which intercept solar radiation and produce a lowering of the temperature.

It is also evident that the phenomenon of cold Mays is a complex problem. The cold May of 1882 was a month rich in ice about Nova Scotia; the current month was exactly the opposite. Pressure over the Canadian Maritime Provinces in 1882 was high; in May, 1907, 1917, and 1924 it was low.

In the last-named year the low pressure in the western Atlantic was preceded by exceptionally low pressure in various parts of the eastern Atlantic for the six months preceding, the locus of the low pressure shifting about as hereinbefore indicated.

DESTRUCTION OF AN AERIAL DURING A THUNDERSTORM

551.594

By IRVING F. HAND

[Weather Bureau, Washington, June 30, 1924]

Since radio has become so popular it is thought that a short account of the destruction by an electric discharge of the aerial used by the Solar Radiation Investigations section of the Weather Bureau at the American University, during a severe thunderstorm on June 18, will be of interest.

The aerial was about 25 feet above ground at both ends, 70 feet long, insulated at one end by a porcelain cleat from the guy wire, which was attached to a tree about 15 feet distant. The other end of the aerial was fastened to a switch on a window sill of the observatory. This switch was open during the storm so that the aerial was an ungrounded unit. Both the aerial wire and the guy wire passed through a three-eighths-inch hole in the porcelain cleat, as it was thought that aside from serving as an insulator, the gap of about $\frac{1}{32}$ inch between the wires in the cleat would act as a lightning arrestor as soon as the tree became sufficiently wet to make a good ground.

[5] C. E. P. Brooks, The abnormal weather of the winter and early spring, 1923–4; Meteorological Magazine, May, 1924.

The storm, which occurred during the afternoon of June 18 was apparently at its greatest intensity between the University and a point 1½ miles to the ENE.; lightning having struck at several points within this region. The rainfall recorded at the American University was 1.48 inch as compared with 0.59 inch at the Central Office of the Weather Bureau 3 miles to the southeast; 80 per cent of this fall taking place within a 20-minute period. An 80-foot flagpole 100 yards from the observatory was snapped off at about its midway point, or just above four large guy wires. There was no evidence of the pole having been struck.

In searching for the aerial wire after the storm, pieces of the insulation were found at various intervals which contained minute quantities of copper; in some of the samples examined, apparently 95 per cent or more of the copper had been blown out of the insulation, which latter consisted of two paraffined layers of cotton thread wound in opposite directions. Larger pieces were found, however, stripped of their outer layer of insulation, which, while retaining somewhat their original cylindrical shape, had a rough and pitted surface and contained a hollow bore, with evidence of fusion at many points. Careful search failed to reveal an unbroken piece of the aerial more than 3 inches in length, while these longer pieces are so altered and shattered that care must be exercised to preserve them in an unbroken state.

The hole in the insulator through which the aerial wire and the guy wire passed was heavily copper-coated, as was also a portion of the outer rim of the insulator. About 13 feet of the guy wire was missing; only a portion extending 2 feet from the tree and the section which was wound around the trunk of the tree remaining. This short piece of No. 18 office wire was unharmed, it appearing as though a mechanical break had occurred, rather than that disintegration had taken place up to this point.

Three possibilities as to the nature of the "stroke" which caused the damage to the aerial occur to the writer, as follows:

(1) *A direct hit.*—Direct hits may occur within wide limits of intensity. Inasmuch as the aerial ran from a well-grounded building 60 feet in height to a 40-foot tree, it is more than likely that the building and the tree were also "struck," providing the phenomenon were of this type.

(2) *A "bound" charge.*—If the aerial were in an electrostatic field, the current of the same polarity as that of the dielectric immediately surrounding the aerial would tend to leak off leaving an opposite charge on the aerial. This latter charge, as soon as the potential gradient between the cloud and the ground collapsed, would neutralize with its complementary charge; this action being accomplished by discharging a major portion of its current to the ground by way of the guy wire and the wet tree.

(3) *Induction.*—While this phenomenon occurs with every stroke, severe damage by this means is rather infrequent. No trace of a direct hit within a short distance has been found.

Clarence LeRoy Meisinger, 1895–1924

To the close of kin and the dear in affection, every death is a disaster. But to humanity the most valuable life, and the saddest to lose, is that of the young scientist just well started on an obviously brilliant career. It was this loss to all the world that evoked the many earnest tributes throughout America and in countries abroad to the memory of that enthusiastic and highly productive meteorologist, Clarence LeRoy Meisinger.

Doctor Meisinger was born at Plattsmouth, Nebr., April 30, 1895, and died in the line of duty—riding the tempest to learn its secrets—near Bement, Ill., June 2, 1924. He graduated from the University of Nebraska in 1917 with the degree of B. Sc., and subsequently obtained the degrees M. Sc. and Ph. D. at the George Washington University. He was an active member of the American Association for the Advancement of Science, the Philosophical Society of Washington, and the American Meteorological Society. In fact he attended every meeting of this latter society, and always had a good paper to present.

In June, 1921, he was happily married to a childhood playmate, the pretty and accomplished Helen B. Hilton, of Lincoln, Nebr.

During the World War he served with distinction in the Army, mainly in the Meteorological section of the Signal Corps, where he attained the rank of second lieutenant, and won his license as a free-balloon pilot. In this capacity he quickly realized that there were many things concerning the air and its ways that no one fully understood. He wanted especially to know what currents of air exist, and why they blow as they do, at ballooning levels. This was the problem, difficult in theory and formidable in magnitude, that he deliberately made his own, not ignorantly and without purpose, but after abundant counsel and with firm resolve to devote to it years of patient study and persistent labor. It soon appeared that flights in free balloons at constant levels should furnish much of the desired information. Hence, Doctor Meisinger's first investigational flight, begun on April 16, 1919, while he was still connected with the Army, was made in this manner. Shortly after this preliminary exploration, which was entirely successful, Doctor Meisinger entered the service of the Weather Bureau. Here he was associated with the editor of the MONTHLY WEATHER REVIEW, and at once became both an earnest student of meteorology and a frequent contributor to that science. His original papers in the MONTHLY WEATHER REVIEW, apart from notes, reviews, and comments, averaged nearly 5 a year, there being 18 in all. In addition to these he published, in 1922, as SUPPLEMENT 21, a most valuable contribution, full of promise alike to the aviator and to the forecaster of coming weather. This paper, "The Preparation and Significance of Free-Air Pressure Maps for the Central and Eastern United States," was the result of a very great amount of labor, guided throughout by well-considered original ideas, and though condensed to the minimum for accuracy and clearness, would alone make a volume of considerable size. He also published many semipopular papers in various journals; and, in addition to this, had begun the preparation of a book on aeronautical meteorology.

By using all available data, and devising rapid yet reliable reduction schemes, he had already brought into clear sight the construction of upper air weather charts with that amazing speed, and nearly the accuracy, with which the surface map is drawn. The value of such maps to the aviator is obvious, and besides, on many occasions they would be of great help to the forecaster.

It was to get information needed for the completion of certain portions of this study of the movements of the air in storm areas that he earnestly sought, and finally obtained. an opportunity to make a series of free-balloon flights under various weather conditions, and in the different sections of a general storm area. In addition to

these data of major value, he expected also to get many facts concerning the dust in the air at flying levels, haziness, size of cloud particles, and nature of any other atmospheric or storm phenomena that might come under his observation. Lieut. James T. Neeley, a skilled free-balloon pilot of the United States Army Air Service, and a former associate of Dr. Meisinger during the war, was his companion on these trips and perished with him.

The first of this series of flights started at Scott Field, as did all the others, near St. Louis, in the late afternoon of April 1, and terminated about the same time the next afternoon in South Carolina. In a letter to Prof. A. J. Henry of the Weather Bureau about this flight, he says:

> I couldn't have wanted a better weather type for a starter, because it gave excellent opportunity to try everything out and get accustomed to the routine. It was worth while in every way. We maintained our level at between 7,000 and 8,000 feet which is quite satisfactory when one keeps the log carefully.

Subsequent flights furnished each its own interest. Only a day or two before starting on that fatal tenth flight, intended to be the last of the series, he wrote as follows to his Weather Bureau colleague, Mr. Herbert Lyman:

> I have had some experiences, I can tell you; some filled with surpassing beauty so far as scenery is concerned; some filled with all the uncertainty and excitement one could possibly ask. In the former category, I would mention our last flight. We passed just at sunrise over the point of Kentucky that juts northward to Covington and Cincinnati. That great bend of the Ohio lay to the north—the valley filled with fog through which twinkled the lights of Cincinnati, and over which shone the red disk of the rising sun. That was exquisite. As for exhilarating excitement, the Hartsburg, Mo., landing takes first rank. Pitch dark; torrential rain; weather so thick the electric lanterns would scarcely reveal the nature of the terrain until we were nearly upon it; a wind of about 25 miles per hour. And we landed—with some violence to be sure—but very neatly in a wheat field a quarter mile from the Missouri River.

His industry and scientific attainments were admirably supplemented by a charming personality—frank, open, and wholesome in every particular. Furthermore, he was an accomplished musician, both as performer and composer. In fact he composed, among other things, his own wedding march, and for several years had been at work on an oratorio, based on the 17th psalm, portions of which already were tentatively completed. Here, too, he worked as a scientist—with the will never to stop until the product was brought to perfection.

We no longer may respond to his cheery "Good morning," nor gladly and profitably consult with him on this or that unsolved problem; yet the example of his buoyant spirit, and resourceful perseverance is ever with us. He so lived that the world is better and wiser because of his having lived. No greater heritage can any man leave than this.—W. J. H.

NOTES, ABSTRACTS, AND REVIEWS

BRAZILIAN MONTHLY WEATHER BULLETIN[1]

The energetic director of the Brazilian Meteorological Service has lost no time in responding to the resolution of the International Meteorological Congress held in Utrecht September last. There has just come to hand the first number of the Brazilian Monthly Weather Bulletin—a four-page large quarto based on telegraphic reports and issued a fortnight after the close of the month to which it refers.

The director is to be congratulated upon the promptness of the appearance of the bulletin and the completeness of the information carried therein.

The text opens with a summary of the atmospheric circulation in the south and central portions of Brazil, and this is followed in order by a synopsis of the weather of the Federal District, the distribution of precipitation in the three great zones—northern, central, and southern—into which the country is divided. Then follows a brief summary of free-air observations as given by records of 10 stations extending from 15° to about 30° south latitude and from 41° to 55° west longitude. The results of free-air observations from the Southern Hemisphere are especially welcome.

A synopsis of the weather as influencing staple crops follows. Numerical values for 63 stations of pressure, temperature, humidity, cloudiness, rainfall, and wind are given and the distribution of rainfall for April is shown on a chart.

[1] Boletim Mensal. Ministerio Da Agricultura, Industria E Commercio, Directoria De Meteorologia, Director: Sampaio Ferraz. Vol. 1, No. 1, April, 1924.

DATES OF GENERAL BREAK-UP OF ICE IN MISSOURI RIVER AT WILLISTON, N. DAK.

[Fort Buford record included.]

By ROSS. O. MILLER, Observer

Year	Date	Year	Date
1882	Apr. 2	1904	Apr. 5
1883	Apr. 11	1905	Mar. 20
1884	Mar. 24	1906	Mar. 29
1885	Apr. 2	1907	Apr. 5
1886	Apr. 6	1908	Apr. 9
1887	Mar. 11	1909	Apr. 4
1888	Apr. 10	1910	Mar. 10
1889	Mar. 21	1911	Mar. 22
1890	Apr. 5	1912	Apr. 1
1891	Apr. 1	1913	Apr. 2
1892	Apr. 2	1914	Apr. 4
1893	Apr. 2	1915	Apr. 5
1894	Apr. 5	1916	Apr. 3
1895	Mar. 30	1917	Apr. 4
1896	Mar. 29	1918	Mar. 23
1897	Mar. 31	1919	Apr. 4
1898	Apr. 13	1920	Mar. 29
1899	Apr. 9	1921	Mar. 30
1900	(1)	1922	Apr. 8
1901	Mar. 27	1923	Apr. 10
1902	Apr. 6	1924	Apr. 3
1903	Apr. 3		

Average date for 42 years' record, including 1924, April 1: Earliest break-up, March 10, 1910; latest April 13, 1898.

[1] No record.